



**Wildlife Services Seeking Solutions Through Research**

**United States  
Department of  
Agriculture**

Animal and  
Plant Health  
Inspection  
Service

**National Wildlife  
Research Center**



## Studying Predator Behavior and Ecology to Improve Livestock and Wildlife Management

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### National Wildlife Research Center Scientists Study Predation Behavior and Ecology

Wildlife Services' (WS) National Wildlife Research Center (NWRC) is the only Federal research facility devoted exclusively to resolving conflicts between people and wildlife through the development of effective, selective, and acceptable methods, tools, and techniques. NWRC's field station in Logan, UT, is the leading coyote ecology research complex in the world.

Data on predator population dynamics, ecology, and behavior are necessary to understand predation patterns on livestock, game species, and threatened and endangered species. This data is also needed for effective depredation management. While much data on



the subject exists, significant gaps remain with regard to predator-prey, predator-livestock, and predator-predator relationships. This project is adopting a multi-disciplinary approach to study interactions among predators, and the impact of predators, and predator removal on ecosystems and wildlife population dynamics. Results from these studies are fundamental to selective predator management. The information gathered will also be used to guide WS' operational programs.

### Groups Affected By These Problems:

- Livestock producers
- Wildlife managers
- Environmental organizations
- Land management agencies
- Pet owners

### Major Research Accomplishments:

- WS showed that coyote population age structure is not an important determinant of coyote litter size.
- WS demonstrated that coyotes can exert significant negative impacts on smaller predators (swift fox, kit fox) and may decimate populations under appropriate conditions.
- WS provided additional evidence that territorial coyotes are primarily responsible for livestock predation although predation by non-territorial coyotes can be significant when prey are abundant and unprotected.

### Applying Science and Expertise to Wildlife Challenges

**Population Analysis**—NWRC and WS operations personnel analyzed reproductive patterns from a 12-year data set that involved 24 pairs of captive coyotes. Results showed that none of the females were reproductively active at one year of age. The next year, however, more than 80 percent developed placental scars (fetal implantation sites). The fraction with placental scars remained

*"Solutions to Problems Depend Upon Knowledge Which Only Research Can Provide"*

**Predator-Prey Relationships**—The role that predation plays in the dynamics of prey populations is controversial. Our understanding of predator-prey relationships is complicated by a multitude of factors in the environment and a general lack of knowledge about most ecological systems. Various factors interact to regulate or limit prey populations and influence the degree to which predation affects prey populations. Some of these factors may create time lags or even cause generational effects of predation that often go unnoticed. At several large field sites across the western United States, NWRC field biologists are examining the impacts of coyotes and other predators on ecosystems that include smaller predators, big game, other prey types, and diverse flora. The goal is to obtain a better understanding of the dynamic roles that predators play in complex environments with and without human involvement.

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